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### Amendments to the Claims

Please amend the claims as follows:

1. (currently amended) A method of ~~depositing optical quality films making silica waveguides by PECVD (Plasma Enhanced Chemical Vapour Deposition)~~, comprising:  
depositing ~~an optical films~~ by PECVD (Plasma Enhanced Chemical Vapour Deposition) in the presence of a silicon-containing gas, an oxidation gas, a carrier gas, and a doping gas, said optical films having refractive indices differing by an amount ~~delta-n of gases~~; and  
setting a total pressure of said gases and flow rates of said silicon-containing gas, said oxidation gas, and said carrier gas at constant values to minimize absorption peaks in FTIR spectra; and  
adjusting the controlling the flow rate of at least one of said gases to minimize unwanted absorption peaks in the deposited films said doping gas while maintaining said total pressure and said flow rates at constant values to achieve a target value for said delta-n.
2. (cancelled)
3. (cancelled)
4. (cancelled)
5. (currently amended) A method as claimed in claim 1, wherein said doping gases include is  $\text{PH}_3$ , and the flow rate of said  $\text{PH}_3$  is varied to minimize unwanted absorption peaks in the deposited layer.
6. (currently amended) A method as claimed in claim 5, wherein said ~~other silicon-~~containing gas is ~~es comprise~~  $\text{SiH}_4$ , said oxidation gas is  $\text{N}_2\text{O}$ , and said carrier gas is  $\text{N}_2$ .
7. (cancelled)
8. (currently amended) A method as claimed in claim 21, wherein said at least one gas is ~~doping a gas is selected from the group consisting of: diborane,  $\text{B}_2\text{H}_6$ ; Arsine ( $\text{AsH}_3$ ); Titanium hydride,  $\text{TiH}_4$ ; or germane,  $\text{GeH}_4$ ; Silicon Tetrafluoride,  $\text{SiF}_4$ ; and of carbon tetrafluoride,  $\text{CF}_4$ .~~
9. (cancelled)
10. (cancelled)

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11. (currently amended) A method as claimed in claim 106, wherein the  $\text{SiH}_4$  gas flow is fixed at about 0.20 std litre/min; the  $\text{N}_2\text{O}$  gas flow is fixed at about 6.00 std litre/min; the  $\text{N}_2$  gas flow is fixed at 3.15 std litre/min; and the  $\text{PH}_3$  gas flow, is varied among the following values: 0.00 std litre/min; 0.12 std litre/min; 0.25 std litre/min; 0.35 std litre/min; 0.50 std litre/min; and 0.65 std litre/min.
12. (currently amended) A method as claimed in claim 11, wherein the ~~the~~ total deposition pressure is fixed at about 2.60 Torr.
13. (original) A method as claimed in claim 1, further comprising subjecting the films to a post deposition thermal treatment.
14. (original) A method as claimed in claim 13, wherein said post thermal treatment takes place at a temperature between 400 and 1200°C.
15. (original) A method as claimed in claim 14, wherein said thermal treatment takes place at about 800°C.
16. (original) A method as claimed in claim 15, wherein said thermal treatment takes place in the presence of nitrogen.
17. (original) A method as claimed in claim 2, wherein said films are deposited at a temperature between 100 and 650°C.
18. (original) A method as claimed in claim 17, wherein said films are deposited at a temperature of about 400°C.
19. (cancelled)
20. (currently amended) A method of ~~depositing-making silica waveguides~~ optical-quality films by PECVD (Plasma Enhanced Chemical Vapour Deposition), comprising:  
    ~~creating-defining~~ a six-dimensional space wherein five dimensions thereof correspond to five first, second, third, fourth, and fifth ~~respective independent variables, of which a set of four~~ said first, second, third, and fourth independent variables relate respectively to the flow-rate of ~~respective of a raw material gas, an oxidation gas, a carrier gas, and a doping gases, and said a~~ respective of a raw material gas, an oxidation gas, a carrier gas, and a doping gases, and said a ~~five~~ fifth independent variable relates to total pressure, and a sixth dimension relates to observed FTIR characteristics;  
    and

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depositing optical quality films having refractive indices differing by an amount  $\Delta n$  by PECVD (Plasma Enhanced Chemical Vapour Deposition) depositing an optical film while maintaining three of said set of four independent variables substantially said first, second, third and fifth independent variables constant at values as well as selected to optimize said observed FTIR characteristics; and  
~~said fifth independent variable, and varying a said fourth of said set of four independent variable to obtain desired characteristics in said sixth dimension to obtain the desired  $\Delta n$  without changing said observed FTIR characteristics.~~

21. (currently amended) A method as claimed in claim 20, wherein said optical films ~~are~~ is a silica films.

22. (cancelled)

23. (currently amended) A method as claimed in claim ~~22~~ 21, wherein said raw material gas is selected from the group consisting of:  $\text{SiH}_4$ ; silicon tetra-chloride,  $\text{SiCl}_4$ ; silicon tetra-fluoride,  $\text{SiF}_4$ ; disilane,  $\text{Si}_2\text{H}_6$ ; dichloro-silane,  $\text{SiH}_2\text{Cl}_2$ ; chloro-fluoro-silane  $\text{SiCl}_2\text{F}_2$ ; difluoro-silane,  $\text{SiH}_2\text{F}_2$ , and any other silicon-containing gases involving the use of hydrogen, H, chlorine, Cl, fluorine, F, bromine, Br, and iodine, I.

24. (currently amended) A method as claimed in claim 23, wherein said oxidation gas is selected from the group consisting of  $\text{N}_2\text{O}$ ; oxygen,  $\text{O}_2$ ; nitric oxide,  $\text{NO}$ ; water,  $\text{H}_2\text{O}$ ; hydrogen peroxide,  $\text{H}_2\text{O}_2$ ; carbon monoxide,  $\text{CO}$ ; or carbon dioxide,  $\text{CO}_2$ .

25. (currently amended) A method as claimed in claim 24, wherein said carrier gas is selected from the group consisting of  $\text{N}_2$ ; helium,  $\text{He}$ ; neon,  $\text{Ne}$ ; argon,  $\text{Ar}$ ; and krypton,  $\text{Kr}$ .

26. (currently amended) A method as claimed in claim 25, wherein said doping gas is selected from the group consisting of  $\text{PH}_3$ ; diborane,  $\text{B}_2\text{H}_6$ ; Arsine ( $\text{AsH}_3$ ); Titanium hydride,  $\text{TiH}_4$ ; or germane,  $\text{GeH}_4$ ; Silicon Tetrafluoride,  $\text{SiF}_4$ , and carbon tetrafluoride,  $\text{CF}_4$ .

27. (original) A method as claimed in claim 20, further comprising carrying out a post-deposition thermal treatment at a temperature between 400 and 1200°C.

28. (original) A method as claimed in claim 27, wherein said post-deposition treatment is carried out in the presence of nitrogen.

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29. (original) A method as claimed in claim 27, wherein said post-deposition treatment is carried out at a temperature of about 800°C.

30.(new) A method as claimed in claim 20, wherein the raw material gas flow is fixed at about 0.20 std litre/min; the oxidation gas flow is fixed at about 6.00 std litre/min; the nitrogen gas flow is fixed at about 3.15 std litre/min; and the dopant gas flow, is varied among the following values: 0.00 std litre/min; 0.12 std litre/min; 0.25 std litre/min; 0.35 std litre/min; 0.50 std litre/min; and 0.65 std litre/min.